

Remarks/Arguments:

Applicants wish to thank Primary Examiner Jill A. Warden for the courteous consideration rendered Applicants' representative during an interview at the PTO on 13 May 2004. As set forth in the corresponding Interview Summary, of record, Applicants' representative proposed amended claims and explained how the amended claims would not be subject to the outstanding rejections of record in the parent application (application number 09/206,161). Details of the explanation are found, paraphrased, below.

The subject application is a continuation of application no. 09/206,161 ("the parent application"). The instant amendment effects changes to the specification, claims, and drawings of the subject application commensurate with those effected in the parent application and, further, changes that address issues of record outstanding in the parent application; specifically, those raised in the Office Action mailed February 26, 2003 ("the Office Action").

Accordingly, the specification is amended, hereby, by adding a complete new section headed "Brief Description of the Drawings." The specification is further revised to correct an obvious clerical error, whereby, in the description of Figure 3 found in the paragraph bridging pages 20 and 21 of the specification, the figure is mistakenly identified as "Fig. 2," instead of –Fig. 3–, in the second line of the paragraph. The mistake is obvious, first of all, since it appears in the paragraph describing Figure 3, and the description of Figure 2 appears in the immediately preceding paragraph. Secondly, the mistake is obvious in that the figure is described as exemplifying "quartz tube . . .

having thread ridge," "screw cap 6," and "septum 7," which features are found only in Figure 3. The requisite marked up version of the amendments is attached, hereto.

The drawings are amended, hereby, to effect changes required in accordance with the Office Action. According to the Office Action, correction to the drawings is necessary because the numeral "2" is allegedly used to identify two different elements in the Figures, i.e., a "common grinding" and an "interchangeable ground joint." The objection refers, specifically, to the specification at "page 20, lines 14-15." Correction is further required allegedly because the "ground surface" and "introducing section" recited in claim 67, and the "open end" and "threaded part" recited in claim 69, are not shown in the drawings.

Attached hereto is a replacement sheet of drawings, corrected as required in the Office Action, for the Examiner's approval and acceptance. In Figures 1 and 2, identifiers "2a" and "2b" are added, which identify the ground surface of the tube and the ground surface of the introducing section, which cooperate as an interchangeable ground joint to connect the tube to the introducing section (*see* specification page 14, lines 16-21). In submitted Figure 3, identifiers "2c" and "2d" are added to denote the "threaded part" of the tube and the "corresponding threaded part" of the introducing section.

The claims are amended, hereby, by presenting new, replacement claims 30-42, which contain the subject matter of claims 66-77 in the parent application, revised in order to address the issues raised in connection with claims 66-77 in the Office Action, as explained below, and otherwise to more clearly define the subject invention.

In accordance with the Office Action, claim 69 (represented by present claim 33) was rejected under 35 USC 112, first paragraph, for allegedly lacking descriptive support in the application as originally filed, i.e., a new-matter rejection. Reconsideration is requested.

According to the statement of rejection (Office Action, page 4), the specification fails to support

the limitation "said open end of said heating section in the form of a tube and said introducing section cooperate by screw[ing] together through a threaded part of said heating section in the form of a tube and [a] corresponding threaded part of [said introducing] section."

The rejection under §112, paragraph 1, cannot be maintained because descriptive support for the claim limitation at issue is found in Figure 3 of the application. Fig. 3, by itself, adequately supports the claim language at issue, since "drawings alone may provide a 'written description' of an invention as required by §112." *Vas-Cath Inc. v. Mahurkar*, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991).

Moreover, support for the limitation at issue is, in fact, found in the present specification, allegations to the contrary in the statement of rejection, notwithstanding. According to the description of Fig. 3 in the specification at page 20, last incomplete paragraph (*emphasis added*):

numeral one is an example using quartz tube with one side closed and the other side having thread ridge a *screw cap* 6 fitted accurately to this *thread ridge* is connected to the quartz tube 1.

A "screw" cap, by definition, must be *threaded*. Furthermore, in order to fit "accurately" to the corresponding threaded ridge of the quart tube, the cap must, also, be threaded. That the words recited in the claims are not found *verbatim* in the specification is of no moment. Presence or

absence of literal support is not the issue. *Ex parte Harvey*, 3 USPQ2d 1626 (Bd. Pat. App. & Inter. 1987). To comply with the written description requirement the specification need not describe the claimed invention *in ipsis verbis*." *In re Edwards*, 196 USPQ 465 (CCPA 1978). The proper test is whether the disclosure reasonably conveys to the skilled artisan that the inventor had possession of the claimed subject matter. *Id.*

In order to comply with the written description requirement, the specification "need not describe the claimed subject matter in exactly the same terms as used in the claims; it must simply indicate to persons skilled in the art that as of the [filing] date the applicant had invented what is now claimed." *Eiselstein v. Frank*, 52 F.3d 1035, 1038, 34 USPQ2d 1467, 1470 (Fed. Cir. 1995) (citing *Vas-Cath*, 935 F.2d at 1562, 19 USPQ2d at 1115, and *In re Wertheim*, 541 F.2d 257, 265, 191 USPQ 90, 98 (CCPA 1976)). . . . [T]he failure of the specification to specifically mention a limitation that later appears in the claims is not a fatal one when one skilled in the art would recognize upon reading the specification that the new language reflects what the specification shows has been invented. See *Eiselstein*, 52 F.3d at 1039, 34 USPQ2d at 1470.

All Dental Prodx LLC v. Advantage Dental Products Inc., 64 USPQ2d 1945, 1948 (Fed. Cir. 2002). Satisfaction of the "written description requirement" is not determined by viewing the specification in a vacuum but "measured by the understanding of the ordinarily skilled artisan." *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 65 USPQ2d 1385, 1387 (Fed. Cir. 2003).

Furthermore, it matters not whether the supporting description is found expressly or inherently in the original disclosure. Inherent disclosure is not new matter. *Kennecott Corp. V. Kyocera International Inc.*, 5 USPQ2d 1194 (Fed. Cir. 1987). "Clearly the observation of a lack of literal support does not, in and of itself, establish a *prima facie* case of for lack of adequate descriptive support under the first paragraph of 35 U.S.C. 112." *Ex parte Parks*. 30 USPQ2d 1234,

1236 (Bd. Pat. App. & Inter. 1993). "The test for sufficiency of support in a parent application is whether the disclosure of the application 'reasonably conveys to the artisan that the inventor had possession at the time of the later claimed subject matter.'" *Vas-Cath Inc.*, 19 USPQ2d at 1116. *In re Kaslow*, 217 USPQ 1089, 1096 (Fed. Cir. 1983).

In accordance with the Office Action, parent application claims 66-77 were rejected under 35 USC 112, second paragraph, for allegedly being indefinite. The rejection is not applicable against any of the present claims, since none of the present claims recites the allegedly indefinite language.

The claims in the parent application were rejected under 35 USC 102(b) and 35 USC 103(a). As set forth in the Office Action, claims 66 and 74 (corresponding to present claims 30 and 38) are allegedly anticipated under §102(b) by each of U.S. Patent No. 4,025,309 (Hach) and U.S. Patent No. 5,064,617 (O'Brien). As also set forth, claims 67-77 allegedly would have been obvious under §103(a) based on either Hach or O'Brien in view of U.S. Patent No. 3,776,695 (Peterson). The rejections under §102(b) and §103(a) cannot be applied against the present claims.

In connection with the §102(b) rejection based on Hach, by the instant Amendment the claims are limited to a molded tube of "quartz, hard glass, or a ceramic," as described in the subject application (page 10, last paragraph). Hach describes a "vessel 11" made of only stainless steel (Hach col. 4, lines 30-31).

For anticipation under § 102 to exist, each and every claim limitation, as arranged in the claim, must be found in a single prior art reference. *Jamesbury Corp. v. Litton Industrial Products, Inc.*, 225 USPQ 253 (Fed. Cir. 1985). The absence from a prior art reference of a single claim

limitation negates anticipation. *Kolster Speedsteel A B v. Crucible Inc.*, 230 USPQ 81 (Fed. Cir. 1986). A reference that discloses "substantially the same invention" is not an anticipation. *Jamesbury Corp.* To anticipate the claim, each claim limitation must "*identically* appear" in the reference disclosure. *Gechter v. Davidson*, 43 USPQ2d 1030, 1032 (Fed. Cir. 1997) (*emphasis added*). To be novelty defeating, a reference must put the public in possession of the identical invention claimed. *In re Donahue*, 226 USPQ 619 (Fed. Cir. 1985).

Since the claim limitation to a tube "molded of quartz, hard glass, or a ceramic" is absent from Hach, the reference cannot anticipate the present claims. *Kolster Speedsteel AB, supra*.

In connection with the rejection under § 102(b) based on O'Brien, it cannot be maintained. The rejection relies on an interpretation of O'Brien, which is based on the mistaken impression that the reference meets the feature of *cooperating elements that effect a sealed tube*, as recited in the rejected (and present) claims.

The statement of rejection (the Office Action, page 6) alleges that the appliance disclosed in O'Brien (Fig. 1) comprises "an introducing section 140 that cooperates with the open end of the [combustion] tube [50] to seal the open end." The allegation is incorrect – the "purge tube 140" in O'Brien does *not* work to *seal* the tube in the manner recited in the present claims.

The statement of rejection apparently relies on O'Brien's teaching (column 5, lines 11-15) (*emphasis added*):

A purge tube 140 (shown schematically in FIG. 1) is mounted to the open end 72 of the combustion tube 70 and receives oxygen from input line 45 as seen in FIG. 1 *to effectively seal* the open end of the combustion tube during an analysis. This

construction is disclosed in detail in U.S. Pat. No. 4,282,183, the disclosure which is incorporated herein by reference.

However, the statement of rejection fails to appreciate the significance of "*effectively*" in interpreting the meaning of "*effectively seal*," which significance is readily apparent from the teachings of "U.S. Pat. No. 4,282,183" (Bredeweg), which discloses "construction" of the device illustrated in O'Brien Fig. 1 "in detail" (O'Brien, column 5, lines 16-18).

As taught in Bredeweg (Abstract and column 2, lines 7-12) (*emphasis added*):
The open end of the combustion tube is *effectively sealed by a curtain of gas* supplied by a flood tube having a plurality of longitudinally and angularly spaced slots and supplied with a suitable gas *for blocking the open end of the tube from admission of atmospheric contaminants and preventing the escape of gasses from the combusted sample. . .*

In the preferred embodiment of the combustion system, the open end of the combustion chamber is *effectively sealed by a gas curtain* such that the interior of the combustion chamber is available to the operator for readily inserting and removing specimens for combustion.

As readily apparent from the teachings of Bredeweg, when O'Brien describes his "*effectively sealed*" combustion tube, the patentee is not intending the art-accepted definition of *seal* – the meaning of "*seal*" as recited in the present claims – as found, e.g., in *EPA: Terminology Reference System* online (URL <http://www.epa.gov/trs/>) (copy attached, hereto):

seal (technical)

- Any device or system that creates a nonleaking union *between two* mechanical or process-system *elements* [*emphasis added*].

O'Brien acts as his own lexicographer – to which he is entitled, *In re Castaing*, 166 USPQ 550 (CCPA 1970) – and defines "*effectively sealed*" as using "*a curtain of gas*" that prevents "*admission of atmospheric contaminants [into]* and . . . *escape of gasses from the combusted sample [out of]*"

the combustion tube (Bredeweg, Abstract) while, at the same time, rendering "the interior of the combustion chamber . . . available to the operator for readily inserting and removing specimens for combustion" (Bredeweg, column 2, lines 7-12).

Accordingly, the "effectively sealed" combustion tube of O'Brien fails to meet the limitation to "an introducing section that (i) cooperates with the open end of the tube and, thereby, seals the open end" recited in the rejected (and present) claims. Since the claim limitation is absent from O'Brien, the reference cannot anticipate the rejected (or present) claims. *Kolster Speedsteel AB, supra.*

The rejection under §103(a) – based on either Hach or O'Brien in view of Peterson – is fatally flawed for a number of reasons. According to the statement of rejection (the Office Action, page 7), each of Hach and O'Brien fully meets the rejected claims except that "both fail to teach the introducing means which is two-way cock to supply liquid to the tube on the tube and introducing means comprising ground surfaces."

First of all, the secondary reference (Peterson) adds nothing to cure the fatal deficiency (shown above) in each of the primary references; i.e., Peterson fails to teach or suggest anything that would have led one skilled in the art (1) to modify Hach in order to meet the present claims (i.e., by replacing Hach's stainless steel combustion vessel with one made of "quartz, hard glass, or ceramic that withstands (i) corrosive gases, (ii) oxidative corrosion, and (iii) heating to a temperature of at least 600°C") or (2) to modify O'Brien in order to meet the present claims (i.e., by using in O'Brien the "introducing section that (i) cooperates with the open end of the tube and, thereby, seals the open

end, and (ii) includes means for introducing liquid into the heating section after the introducing section seals the open end of the tube").

Secondly, assuming, arguendo, existence of the requisite prior art motivation to combine Peterson with each of Hach and O'Brien, the combination would not have been obvious, under section 103(a), because the prior art fails to provide the necessary *enablement* for one skilled in the art to *make* a combined structure alleged in the statement of rejection. To reject claims for obviousness under §103 based on modifying the teachings of a reference, existence in the prior art of a reason (motivation) to effect the modification is not, by itself, sufficient to sustain the initial burden on the PTO; the "record" must show

... that it would also have been obvious *how* this [modification] could be achieved Obviousness . . . must not be judged by hindsight, and a "little modification" can be a most unobvious one.

In re Irani, 166 USPQ 24, 27 (CCPA 1970) (*emphasis in original*). Prior art relied on in a rejection under §103 must be *enabling*, i.e., "if the prior art of record fails to disclose or render obvious a method of making the claimed [invention] . . . it may not be legally concluded that the [invention] . . . was in the possession of the public. *In re Hoeksema*, 158 USPQ 596, 601 (CCPA 1968).

With respect to combining Hach and Peterson, the lack of enablement is readily apparent in that there is nothing in the prior art of how the stop-cock arrangement and crowned-glass joint of the Peterson device could be combined with, or modify, the stainless steel, pressure-sealed combustion device of Hach. According to the statement of rejection "the use of stop-cocks and ground-surfaces are considered conventional in the art, see Peterson" (the Office Action, page 7). This allegation,

first of all, ignores the fact that Peterson does not teach merely a ground-surface joint; the reference teaches a ground-glass joint. The statement of rejection fails to explain whether the alleged motivation would have suggested modifying Hach to include a ground-metal joint, or a ground-glass joint, or a ground metal-glass joint. In any event, the statement of rejection fails to explain *how to make the resulting structure* would have been obvious.

There is no apparent purpose served by modifying Hach to include the stop-cock arrangement of Peterson. Assuming, arguendo, that the statement of rejection is correct (which it is not) in alleging that Peterson teaches the conventionality of a stop-cock arrangement in the art, this is no more than an allegation that the use of such a stop-cock arrangement *was known in the art*. It is well-established that prior art knowledge, alone, fails to provide the necessary motivation for combining separate prior art teachings. The fact that all elements of a claimed invention are known does not, by itself, make the combination obvious. *Ex parte Clapp*, 227 USPQ 972 (BPA & I 1985). It is legally erroneous to reach a conclusion of obviousness under §103 solely on the basis that the claimed invention represent a "combination which only unites old elements with no change in their functions." *Pentec, Inc. v. Graphic Controls Corp.*, 227 USPQ 766, 771 (Fed. Cir. 1985). As stated by the United States Court of Appeals for the Federal Circuit ("Federal Circuit") in the decision *In re Rouffet*, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998),

invention itself is the process of combining prior art in a nonobvious manner [citations, omitted]. Therefore, even when the level of skill is high, the . . . [USPTO] must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination.

Moreover, §103 does not require inventions to an improvement over, or more complex than, the prior art in order to be nonobvious. It must be remembered that "invention itself is the process of combining prior art in a nonobvious manner [*citations omitted*]." *In re Rouffet*, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998).

... it is impermissible to use the claims as a frame and the prior art references as a mosaic to piece together a facsimile of the claimed invention.

Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988).

It is insufficient that the prior art disclosed the components of the patented device, either separately or used in other combinations; there must be some teaching, suggestion, or incentive to make the combination made by the inventor.

Northern Telecom, Inc. v. Datapoint Corporation, 15 USPQ2d 1321, 1323 (Fed. Cir. 1990), *cert. denied*, 498 U.S. 920 (1990).

The mere fact that it is possible to find two isolated disclosures which might be combined in such a way as to produce a new compound does not necessarily render such production obvious unless the art also contains something to suggest the desirability of the proposed combination.

In re Bergel, 130 USPQ 206, 208 (CCPA 1961).

In point of fact, the combination of Hach and Peterson as alleged in the statement of rejection represents classic *hindsight*, which is impermissible in an analysis under section 103(a). "One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *In re Fine*, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988).

It is impermissible within the framework of §103 to pick and choose from any one reference only so much of it as will support a given position, to the

exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.

In re Hedges, 228 USPQ 685, 687 (Fed. Cir. 1986). It is the combined teachings of the prior art, taken as a whole, which must be considered in an obviousness analysis. *Ryko Manufacturing Co. v. Nu-Star, Inc.*, 21 USPQ2d 1053 (Fed. Cir. 1991).

When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself. . . . There must be "something in the prior art to suggest the desirability, and thus the obviousness, of making the combination" [citation omitted].

Interconnect Planning Corp. v. Feil, 227 USPQ 543 (Fed. Cir. 1985).

The requisite prior-art motivation needed to support a §103(a) rejection (*Clapp, supra*) is lacking. No reason (i.e., motivation) to combine O'Brien and Peterson together, or to combine Hach and Peterson together, as alleged in the statement of rejection, is evidenced in any of the three references. Absent motivation *in the prior art* to combine O'Brien and Peterson, the references cannot be combined in order to show obviousness under §103. When the claimed invention requires modification of the prior art, there is no obviousness under §103(a) when "[t]he prior art does not suggest . . . [the] modification . . . or provide any reason or motivation to make the modification."

In re Laskowski, 10 USPQ2d 1397, 1398 (Fed. Cir. 1989).

The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.

In re Fritch, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992).

Accordingly, the present claims are not subject to rejection under §103(a) based on the teachings of either Hach or O'Brien in view of Peterson.

Moreover, not only is the requisite motivation *to combine* the references lacking, but, in fact, there is motivation *not to combine* the references. Peterson *cannot* be combined with either primary reference as alleged in the statement of rejection, since it would destroy the invention on which each of the primary references is based. In an obviousness analysis under §103(a), a reference can not be combined with another reference in such a way that destroys the invention on which one of the references is based. *Ex parte Hartmann*, 186 USPQ 366 (POBdApp 1974).

Modifying O'Brien to use the "stopcock means 3'" of Peterson (column 5, line 22) would render the O'Brien "gas curtain" ineffective and, moreover, not permit the Bredeweg construction (adopted by O'Brien), which allows "the interior of the combustion chamber . . . [to be] available to the operator for readily inserting and removing specimens for combustion" (Bredeweg, *supra*). Therefore, modifying O'Brien in view of Peterson would destroy the invention on which O'Brien is based and, so, the rejection under §103(a) based on the combined teachings of O'Brien and Peterson cannot be maintained against the present claims. *Hartmann*.

Modifying Hach to use the "stopcock means 3'" of Peterson (column 5, line 22) is contraindicated by the objectives of Hach, i.e., stated objectives in Hach would not be achieved if Hach were modified to use the "stopcock means 3'" of Peterson. As taught by Hach (column 1, lines 9-45) (*emphasis added*):

Many techniques are known for accurately determining the elemental carbon and nitrogen contents of oxidizable samples. . . . While employed widely, these techniques suffer many disadvantages which have heretofore *limited their applicability to well-equipped laboratories* and have restricted their use in the field. *From the standpoint of a farmer* who wishes to determine the organic nitrogen (i.e., protein) content of animal feeds with a view toward providing feed supplements, delays in transporting samples to an analytical laboratory and awaiting receipt of the analysis are intolerable. Accordingly, *an object of the invention* is to provide an analytical system for determining the elemental carbon and nitrogen contents of a sample, which system is *suitable for portable, on-site use*.

Another *disadvantage* of many of these existing analytical techniques is that *they require sources of pure gases, e.g., oxygen and carbon dioxide, and require the preparation and standardization of analytical reagents, together with tedious titrations. Another object* is to provide such technique which *requires no extraneous gases, no analytical grade reagents, no standardization, and no titration procedure*.

Still *another detriment* to the more widespread availability of analytical methods for determining carbon and nitrogen contents is the requirement of many of them that *delicate mechanical or electronic laboratory equipment* be employed. Still *another object of the invention* is to provide an analytical method *which requires only one accurate weighing, and no sophisticated measuring* beyond those commonly and routinely employed by industrial or agricultural technicians.

An *overall object* is to provide a method and portable apparatus for determining the elemental carbon and nitrogen contents of combustible samples, which is low in equipment cost, low in operating cost, *employs only rugged instrumentation*, and is suitable for rapid, accurate measurements of total carbon and total nitrogen contents.

As readily apparent from the aforesaid disclosure in Hach, the key objective of Hach's invention is to provide a device that is sufficiently "rugged" to be "suitable for portable, on-site use" by, for example, "a farmer who wishes to determine the organic nitrogen (i.e., protein) content of animal feeds." In conjunction with this key objective, a corresponding objective of Hach is *not to use "delicate mechanical or electronic laboratory equipment."* One of the ways in which these objectives are achieved by Hach is the use of "a stainless steel vessel" (Hach, column 4, line 32) as the sole

embodiment disclosed for the "evacuable pressure vessel" (Hach, column 2, line 7, *see* claim 1) of his invention.

As opposed to the stainless-steel-vessel embodiment expressly disclosed by Hach, the quartz-glass combustion tube and stop-cock means of Peterson represent just the sort of "delicate," e.g., easily broken, and "sophisticated" laboratory equipment, which need to be avoided in order to achieve the objectives expressly described by Hach.

Accordingly, modifying Hach in view of Peterson, as alleged in the §103(a) rejection, would prevent achievement of the objectives in Hach and, so, destroy the invention on which Hach is based. Since an obviousness analysis under §103(a) cannot combine one reference with another reference in such a way that destroys the invention on which one of the references is based, *Hartmann, supra*, the rejection under §103(a) cannot be applied against the present claims.

While the forgoing analysis adequately demonstrates the inapplicability of the §102 and §103 rejections based on the 3 cited references, applicants provide the following remarks, showing additional patentable distinctions with respect to the cited references.

Hach (column 2, lines 10-14) teaches: "Into the bottom of vessel 11 is placed . . . organic sample 15, which has been intimately admixed with a powdery or granular cupric oxide oxidizing agent." Hatch (column 2, lines 23-25) further teaches: "Atop the sample 15 is advantageously placed a secondary combustion layer 16 composed of an additional cupric oxide oxidizing agent." So, in Hach there is a phase of powdered cupric oxide, halogenide ion, and/or sulfate ion, which is produced by oxidation of a sample, which forms a salt with copper. Therefore, even if absorbing

liquid is added to the combustion vessel, the absorbing liquid cannot penetrate into the minute cracks between the particles (granules) of copper and, so, all of the resulting halogenide ion and sulfate ion cannot be taken up by the absorbing liquid, making accurate quantitative measurement impossible.

O'Brien, column 7, line 7 to 27, teaches "the system of the present invention, - for complete conversion to SO₂ or CO₂" and in Fig. 1 "of dryer 32 - determinator 44," the concentration of SO₂, CO₂ in the generated gas is measured by an IR detector after the sample is burned (subjected to combustion) and converted into SO₂, CO₂ in O'Brien.

On the contrary, in the appliance of the presently claimed invention, the object to be measured (organic matter containing halogen and/or sulfur) is burned (subjected to combustion) and a liquid is introduced into the generated gas containing halogen and/or sulfur to dissolve it, which is placed at analysis. At the time of measuring, the object to be measured (compounds containing halogen and/or sulfur), which has been dissolved, is measured by chromatography, *inter alia*. Therefore, a difference is that, at the time of measuring gas generated after burning (combustion) of a sample, the presently claimed invention measures the matter dissolved in a liquid, while O'Brien measures the concentration of CO₂ and SO₂ in the generated gas, and O'Brien contains no description of introducing a liquid component.

O'Brien (column 4, lines 44-52) discloses: "Plug 90 has an enlarged cylindrical end 94 with a shoulder [sic] 95. . . to tube 50. The porous ceramic plug 90 is made of reticulated alumina or zirconia material having a porosity of approximately 10 porous [sic] per inch." In other words, there is a plug of porous alumina or zirconia located between concentrically aligned tubes 70 (inner) and

50 (outer) and, so, combustion gas (CO₂ etc.) resulting from sample oxidation is transferred to the outer tube 50 through the porous material and, then, conveyed to an infrared (IR) detector. Even if absorbing liquid is poured into this instrument, that portion of the halogenide ion and sulfate ion bound in the cracks of the porous plug cannot be completely washed out, making accurate quantitative analysis impossible, as opposed to the presently claimed invention.

Peterson (column 2, line 67, to column 3, line 24) describes the method of comprising positioning a sample of the material with a suitable scintillation solvent, to effect condensation and dissolution of the active products to be analyzed. Peterson is concerned with a method of measuring a sample containing a radioactive isotope element, such as tritium and carbon-14, and the measurable sample is limited to the sample containing the radioactive isotope. On the contrary, in the presently claimed invention, the radioactive isotope element cannot be the requirement for constitutional elements contained in the object sample to be measured, and the dissolved matter, wherein the gas generated after burning (combustion of) a sample is merely dissolved in a liquid, is subjected to measurement, while the sample containing radioactive isotope element is indispensable for Peterson, which uses a scintillation counter for the measurement.

Peterson (column 4, lines 39-42) teaches: "The combustion tube 1 is provided with a suitable porous substrate 5 at a point approximately midway between the inlet opening 2 and the outlet opening 7." Therefore, there is (in Peterson) a porous portion in the combustion tube. Even if absorbing liquid were introduced into the tube, that part of the halogenide ion and sulfate ion bound

inside the cracks of the porous portion cannot be completely washed out, making accurate measurement impossible.

As indicated, above, the three cited references describe a combustion chamber that contains some form of porous or granular substance; and, further, none of the references provides a structure into which absorbing liquid could be poured. Therefore, each of the references is patentably different from, and gives no hint of, the presently claimed invention.

Concerning the combination of O'Brien and Peterson, while O'Brien uses an IR detector to measure the concentration of CO₂ and SO₂ in the gas generated after combustion of the sample, Peterson uses the amount of radioactive isotope found in the sample as the form of measurement. Accordingly, O'Brien and Peterson differ from one another in the type of sample measured and in the principle of measurement.

Accordingly, the presently claimed invention is patentably different from O'Brien and Peterson, taken alone or in combination. Therefore, one of ordinary skill in the art would not have considered the presently claimed invention obvious based on the combined teachings of O'Brien and Peterson, as alleged in the statement of rejection.

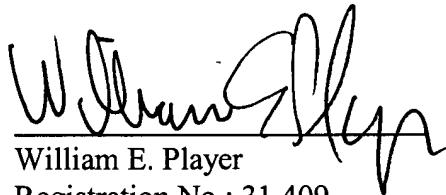
Application No. 10/647,435
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Favorable action is requested.

Respectfully submitted,

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seal (technical)



- Any device or system that creates a nonleaking union between two mechanical or process-system elements.(Source: MGH) (Source: [European Environment Agency \(EEA\)](#), [European Topic Centre on Catalogue of Data Sources \(ETC/CDS\)](#): [General Multilingual Environmental Thesaurus Term Detail](#))

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Amendments to the drawings:

Figures 1-3, as amended, are presented in a drawings Replacement Sheet (Appendix, *supra*), in place of the corresponding figures currently of record. The figures are amended by labeling features in the drawings as 2a, 2b, 2c, and 2d.